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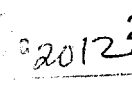
3 June 1960

Dear Dick:

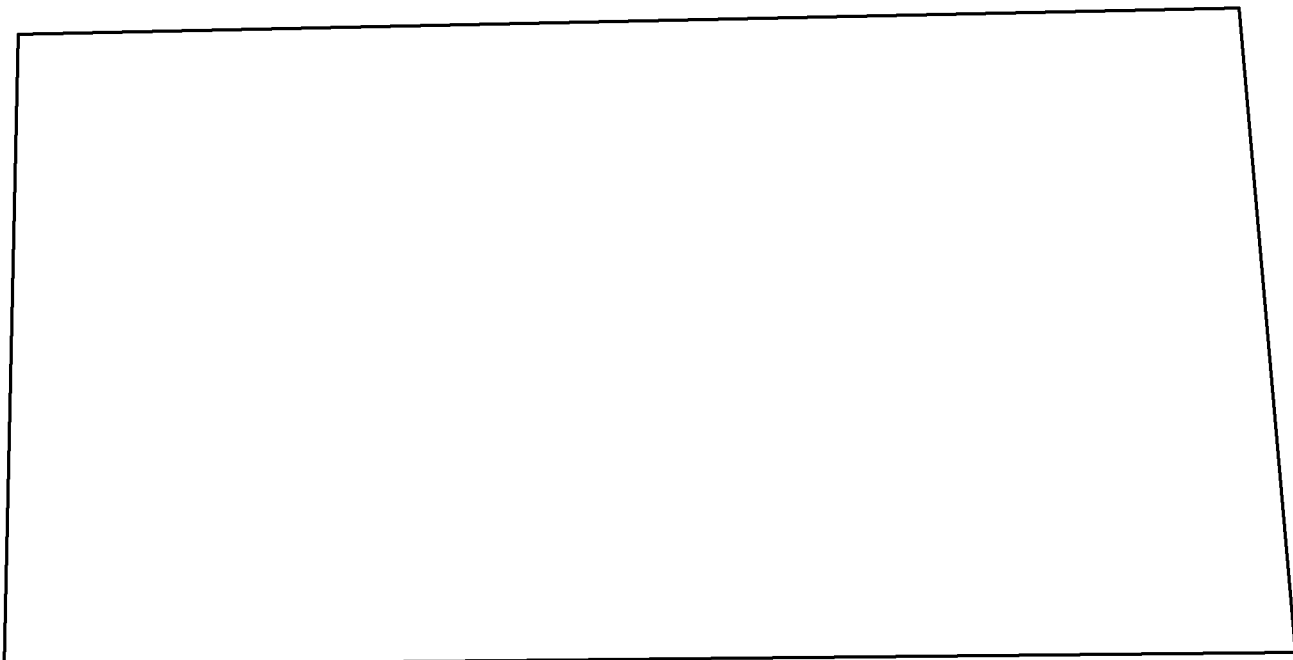
PROGRESS REPORT #9

During the month of May, we began to make real progress on the A-12.
Having just returned from a trip on which I briefed you quite thoroughly,
I will make this a short report.

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DOCUMENT NO. 100
NO CHANGE IN CLASS.
CLASS. 1
DATE: 5 Feb 82
REVIEWER: 

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2. MATERIAL STATUS

Between May 2nd and May 27th, our rejection of titanium sheets dropped from a high of 94% to 25%. From the 15th forward, our rate of rejection was under 12%. On a total of 890 parts made for the airplane, the final net rejection was between 7% and 8%. Our meetings with both Titanium Metals Corporation and [redacted] were very fruitful, a typical outcome of which is shown in the attached letter. In the same period, our static test models, which six months ago were failing at about one-half ultimate load, have now come up to the point where every one tested has passed 100% ultimate load, some going as high as 164%. From some of these tests, there appears to be some weight saving possible, but we are going to hold consistently above 100% ultimate strength, in any case, merely as a matter of good judgment.

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We are carving out some of the major nacelle rings with apparent success. We have been able to double our rate of material removal over the last month, getting up to about 2 cu. in. per minute. We have developed flame cutting of heavy billet stock to the point where we can cut 20 inches per minute through an 8-inch billet and reduce the waste material between the flame and the part by 1/2 inch. The basic outlook on our material problem, which has definitely cost us schedule time, is much better and I am well pleased that, having pulled 9000 test coupons to this point, the result of the program is giving us extremely good cost control.

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3. WEIGHT STATUS

Assuming the use of 2-inch loaded honeycomb in the chines, our current weight status indicates an overweight condition of 345 pounds. As a part of our test program, we are able to hold sheet stock to considerably closer tolerances than dural. In the weight analysis, we had approximately 700 pounds of weight for sheet over tolerance. If we can get [] to hold TMC tolerances, it looks like we would save this amount of weight. The reasons for our overweight have been increases in the weight of the alternator, the tailpipe ejector, and the fuel pumps; an increase in wing stiffness required for aeroelastic effects; and the use of bigger wheels and tires. There have been reductions in the weight of the fuselage, the forward ejector section, and the metallic portion of the chines. The biggest increment has been in a 214-pound weight increase in the [] in-
take system. We believe this increment can be reduced, but, because of the complexity of providing not only a failsafe system, but an emergency means for positioning the spike after engine failure, we will still be overweight beyond the initial estimates. The []
[] gear today is about 50% more complicated than their initial proposal, due to factors primarily beyond their control, but put in at my insistence to provide the safest possible operation. As of today, I am not satisfied with the safety of operation, because of the extremely small holes used to sense pressure differences and preposition the spike.

4. GENERAL DESIGN

The engineering design release rate is on schedule. We are considerably ahead of the shop, because of their problem in training and in material availability. We are entering a period where a vast number of tests will be made on all sections of the structure and aircraft systems.

5. FUEL SYSTEM RIG

We are pumping fuel through the systems, which appear to be working well. We have run simulated refuelings at up to 900 gallons per minute, with proper operation of the fuel shutoff and transfer valves. I do not, of course, expect this fine luck to continue, but we have a good start.

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6. SHOP STATUS

We have run into difficulty on the shop schedule from three points of view. First, there is the basic problem of training everyone in our extreme quality control methods on a new material. Second, there is the very discouraging operation we went through making many parts which had to be scrapped because of improper material. We finally had to use the improper material for training. The third factor, and the current major one, is a decision we voluntarily took, shortly after May 1st, not to hire people "off the street." It did not appear wise, from a security point of view, to hire 80 tool and die makers, which we were planning to do prior to the May 1st incident. We are pulling from the California Division as many people as possible on whom security investigations have already been run. There are tooling people available in the streets, but we believe it is still unwise to hire from this source. It is not certain at this time whether there is any net effect of schedule delay which cannot be made up. We are still lacking some important large sections of material from [redacted] and certain thin sheet gauges (almost 500 sheets) were rejected at TMC prior to shipment. This situation is now under control, but time has been lost.

7. MISCELLANEOUS

We are in full operation with Minneapolis-Honeywell, and will shortly go on to the Ames simulator to check our flight characteristics, with and without stability augmentation. Their initial comments to us have been more favorable regarding flight characteristics than some views I have held myself. They are due to visit us Tuesday, June 7th, for a detailed analysis of aircraft dynamic modes. NASA continues to give us excellent support in the wind tunnels and the facility situation seems to be fairly well in hand, except in our ability to get a telemetering system as a safety check for our initial flights. This is, however, being pursued with all diligence by Col. Geary's group.

In regard to a possible cover story, on my last visit to Washington I proposed the use of the X-12 approach, and discussed this with your security people. I will give you some additional written comments, which may be of some use on the subject, in the near future.

Sincerely,

cc: E. K.
J. P. ✓